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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/692,100	10/22/2003	Richard V. Kisley	SJO9-2003-0008US	6561

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EXAMINER

FLOURNOY, HORACE L

ART UNIT PAPER NUMBER

2189

DATE MAILED: 04/19/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/692,100	KISLEY ET AL.	
	<b>Examiner</b>	<b>Art Unit</b>	
	Horace L. Flournoy	2189	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 07 February 2006.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-28 and 30 is/are pending in the application.
- 4a) Of the above claim(s) 29 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,2,4,5,7,8,11,12,14,15,17-28 and 30 is/are rejected.
- 7) ☒ Claim(s) Claims 3, 6, 9-10, 13, 16 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
     Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
     Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Response to Amendment***

This Office action has been issued in response to amendment filed 10 January 2006. Claims 1-30 are pending. Applicant's arguments have been carefully and respectfully considered, but they are not entirely persuasive, as will be discussed in more detail below, even in light of the instant amendments. Furthermore, new grounds for rejection have been set forth.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

**Claims 1-2, 4-5, 7-8, 11-12, 14-15, and 17-28, 30** are rejected under 35 U.S.C. 102(b) as being anticipated by Ohran (U.S. Patent No. 6,397,307 hereafter referred to as Ohran).

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With respect to **independent claim 1**,

*"An apparatus for incremental data storage, the apparatus comprising: a baseline partition containing a baseline image; **[FIG. 2, element 30]** an incremental log configured to store data, **[FIG. 3, element 22: "Cache Holding Area" and all associated text from specification]** the incremental log comprising at least one snapshot partition; **[FIG. 3, element 70]** and a partition module configured to automatically partition the incremental log into an additional snapshot partition in response to a snapshot operation." **[FIG. 4A and all associated text from specification]***

With respect to **claim 2**,

*"The apparatus of claim 1, wherein the partition module is further configured to assign a volume identifier to a newly formed partition as directed by a storage management policy." **[disclosed, e.g. in column 13, lines 25-30]***

With respect to **claim 4**,

*"The apparatus of claim 1, further comprising a compaction module configured to compact a snapshot partition." **[FIG. 4A: The examiner interprets in-place compaction as a collapsing mechanism shown in FIG. 4A]***

With respect to **claim 5**,

*"The apparatus of claim 4, wherein the compaction module is further configured to conduct compaction as directed by a storage management policy." **[FIG. 4A:***

**The examiner interprets in-place compaction as a collapsing mechanism shown in FIG. 4A]**

With respect to **claim 7**,

*"The apparatus of claim 4, wherein the compaction module is further configured to conduct in-place compaction."* **[FIG. 4A: The examiner interprets in-place compaction as a collapsing mechanism shown in FIG. 4A]**

With respect to **claim 8**,

*"The apparatus of claim 4, wherein the compaction module is further configured to automatically compact a snapshot partition to the baseline volume."* **[FIG. 4A: The examiner interprets in-place compaction as a collapsing mechanism shown in FIG. 4A]**

With respect to **claim 10**,

*"The apparatus of claim 1, wherein the read module is further configured to retrieve the most recent data corresponding to a specified snapshot volume and block address."* **[FIG. 3, element 22: "Cache Holding Area" and all associated text from specification]**

With respect to **independent claim 12**,

*"An interface for managing incremental data storage, the interface comprising: a write function configured to append an entry to an incremental log; [FIG. 3,*

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**element 22: "Cache Holding Area" and all associated text from specification]** *a read function configured to retrieve a most recent log entry corresponding to a block address; [Ohran discloses in column 8, lines 30-34, "Those changes are later consolidated, either on-the-fly or after a selected period of time, to reflect only the most recent change made to each storage location of the primary mass storage."]* *and a snapshot function configured to automatically partition the incremental log into a first and a second volume."* **[Ohran incorporates by reference U.S. Patent Number 5,835,953. This reference teaches the above limitations, e.g., in FIGs. 4-7A]**

With respect to **claim 14**,

*"The interface of claim 9, further comprising a read next entry function configured to retrieve a sequential entry from the incremental log."* **[FIG. 3, element 22: "Cache Holding Area" and all associated text from specification.]**

With respect to **claim 15**,

*"The interface of claim 9, further comprising a compact volume function configured to compact a snapshot volume."* **[FIG. 4A: The examiner interprets in-place compaction as a collapsing mechanism shown in FIG. 4A]**

With respect to **independent claim 17**,

*"A method for managing incremental data storage, the method comprising: appending data to an incremental log; [FIG. 3, element 22: "Cache Holding Area" and all associated text from specification] automatically partitioning the*

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*incremental log in response to a snapshot operation; and automatically assigning a volume identifier to a newly formed partition.” [disclosed, e.g. in column 13, lines 25-30]*

With respect to **claim 18**,

*“The method of claim 17, wherein automatically assigning a volume identifier to a newly formed partition occurs as directed by a storage management policy.”*  
**[disclosed, e.g. in column 13, lines 25-30]**

With respect to **claim 19**,

*“The method of claim 17, further comprising conducting in-place compaction of a snapshot partition.”* **[FIG. 4A: The examiner interprets in-place compaction as a collapsing mechanism shown in FIG. 4A]**

With respect to **claim 20**,

*“The method of claim 17, further comprising automatically compacting a snapshot partition.”* **[FIG. 4A: The examiner interprets in-place compaction as a collapsing mechanism shown in FIG. 4A]**

With respect to **independent claim 21**,

*“An apparatus for managing incremental data storage, the apparatus comprising: means for appending data to an incremental log; [FIG. 3, element 22: “Cache Holding Area” and all associated text from specification] means for*

*automatically partitioning the incremental log in response to a snapshot operation; [FIG. 4A and all associated text from specification] means for automatically assigning a volume identifier to a newly formed partition; [Ohran incorporates by reference U.S. Patent Number 5,835,953. This reference teaches the above limitations, e.g., in FIGs. 4-7A] and means for conducting in-place compaction of a snapshot partition."* **[FIG. 4A: The examiner interprets in-place compaction as a collapsing mechanism shown in FIG. 4A]**

With respect to **independent claim 22**,

*"A system for redundant incremental data storage, the system comprising: a primary storage device configured to store data; [FIG. 1, element 12: "Primary System"] a secondary storage device configured to store data within a baseline volume and an incremental log comprising at least one snapshot partition that corresponds to a snapshot volume; [FIG. 1, element 24, and FIG. 4A] a controller configured to store and access data on the primary and secondary storage device; [Ohran discloses in column 3, lines 56-60, "If the two disks are connected to two separate disk controller cards, then if a single disk controller card or a single disk fails, then the data is still accessible through the other disk controller card and disk assembly."]* *and a snapshot management module configured to automatically partition the incremental log into an additional snapshot partition and associate the additional snapshot partition with a volume identifier [disclosed, e.g. in column 13, lines 25-30] in response to a snapshot operation."* **[FIG. 4A and all associated text from specification]**



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With respect to **claim 23**,

*"The system of claim 22, wherein the snapshot management module is further configured to automatically compact a snapshot volume into the baseline volume in response to the snapshot operation."* **[FIG. 4A: The examiner interprets in-place compaction as a collapsing mechanism shown in FIG. 4A]**

With respect to **claim 24**,

*"The system of claim 22, wherein the snapshot management module is further configured to conduct in-place compaction of a snapshot partition."* **[FIG. 4A: The examiner interprets in-place compaction as a collapsing mechanism shown in FIG. 4A]**

With respect to **claim 25**,

*"The system of claim 22, wherein the primary storage device comprises a plurality of redundantly arranged storage devices".* **[disclosed, e.g. in FIG. 3 and associated text]**

With respect to **independent claim 26**,

*"A computer readable image for managing incremental data storage, the computer readable image comprising program code configured to conduct a process comprising: append data to an incremental log; [FIG. 3, element 22: "Cache Holding Area" and all associated text from specification] automatically partition the incremental log in response to a snapshot operation; [FIG. 3, element 22: "Cache Holding Area" and all associated text from*

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**specification]** and automatically assign a volume identifier to a newly formed partition." [disclosed, e.g. in column 13, lines 25-30].

With respect to **claim 27**,

*"The computer readable image of claim 26, wherein the process further comprises conducting in-place compaction of a snapshot partition. [FIG. 4A: The examiner interprets in-place compaction as a collapsing mechanism shown in FIG. 4A]*

With respect to **claim 28**,

*"The computer readable image of claim 26, wherein the process further comprises automatically assigning a volume identifier to a newly formed partition occurs as directed by a storage management policy." [disclosed, e.g. in column 13, lines 25-30]*

With respect to **claim 29**,

*"The computer readable image of claim 26, wherein the process further comprises conducting in-place compaction of a snapshot partition". [FIG. 4A: The examiner interprets in-place compaction as a collapsing mechanism shown in FIG. 4A]*

With respect to **claim 30**,

*"The computer readable image of claim 26, wherein the process further comprises automatically compacting a snapshot partition." [FIG. 4A: The*

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**examiner interprets in-place compaction as a collapsing mechanism shown in FIG. 4A]**

***Allowable Subject Matter***

Claims 3, 6, 9-10, 13, 16 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

**CONCLUSION**

**Direction of Future Correspondences**

Any inquiry concerning this communication or earlier communication from the examiner should be directed to Horace L. Flournoy whose telephone number is (571) 272-2705. The examiner can normally be reached on Monday through Friday 8:00 AM to 5:30 PM (ET).

**Important Note**

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Reginald G. Bragdon can be reached on (571) 272-4204. The fax phone numbers for the organization where this application or proceeding is assigned is (703) 746-7239.

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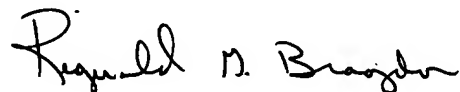
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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (571) 272-2100.

Horace L. Flournoy

Patent Examiner

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A handwritten signature in black ink, appearing to read "Reginald M. Bragdon". The signature is fluid and cursive, with the first name being the most prominent.

Supervisory Patent Examiner

Technology Center 2100